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| **Class Name:** Action | |
| **Description:** Contains the operations to perform with a Formatter’s Rule(s) | |
| **Contracts:**  1. Manage Action  - Add Action to Rule  **-** Delete Action from Rule  2. Manage Field  - Hide Field  - Unhide Field  - Update Field  **Private Responsibilities:** | **Collaborations:**  Rule (23), Hook (13)  Rule (23), Hook (13)  Field (5)  Field (5)  Field (6), Hook (15) |
| **Comments:**  Contains the steps by which to: Hide, Rename, Annotate, Create Hook | |

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| **Class Name:** AnnotationAction | |
| **Description:** Contains metadata of the annotation and annotation itself for a Field | |
| **Contracts:**  3. Manage Annotation  - Add Annotation  - Update Annotation  - Delete Annotation  **Private Responsibilities:** | **Collaborations:**  Rule (23)  Rule (23)  Rule (23) |
| **Comments:**  Attributes include user name, time added, time modified, and the annotation itself | |

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| **Class Name:** Expression | |
| **Description:** The string by which to Filter views on the Proto Element, Field, or Rules | |
| **Contracts:**  4. Manage Primitives  - Add primitive  - Delete primitive  **Private Responsibilities:** | **Collaborations:** |
| **Comments:**  Contains one or more primitives defined by Berkeley Packet Filter (BPF) syntax | |

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| **Class Name:** Field | |
| **Description:** Element of ProtoElement that is editable Rule(s) in a given Protocol | |
| **Contracts:**  5. Visualize Field  - Show Field  - Hide Field  6. Modify Field  - Rename Field  - Add Hook to Field  - Annotate Field  - Update Field  **Private Responsibilities:** | **Collaborations:**  Action (2)  Action (2)  Action (1)  Action (1)  AnnotationAction (3)  Hook (15) |
| **Comments:**  Contains the following optional and required attributes:  Optional attributes – hidden (Boolean), mask (Bytes), showdtl (String), showmap (String), showvalue (Integer)  Required attributes – longname (String), name (String), pos (Bytes), show, showname (String), size (Bytes), unmaskedvalue (*required only if the length of the current field is not an integer number of bytes*), value (Hex, String) | |

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| **Class Name:** File | |
| **Description:** Represents the Script, Historical Copy, and PDML | |
| **Contracts:**  7. Create Historical Copy  - Convert in tShark  - Create PDML file  **Private Responsibilities:**  - Create new File | **Collaborations:**  tShark (27) |
| **Comments:**  Abstract class which handles creation, opening, saving, and modifications to PDML original and Script as well as creation of Historical Copies | |

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| **Class Name:** Filter | |
| **Description:** Contains Expression(s) by which to visualize and modify the PDML capture | |
| **Contracts:**  8. Manage Filter  - Add Filter to Rule  - Delete Filter from Rule  9. Manage Expression  - Add Primitive to Expression  - Remove Primitive from Expression  **Private Responsibilities:** | **Collaborations:**  Rule (22)  Rule (22)  Expression (4)  Expression (4) |
| **Comments:**  Contains one Berkeley Packet Filter (BPF) expression | |

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| **Class Name:** Formatter | |
| **Description:** Allows to apply rules to Fields in a Protocol for inspection | |
| **Contracts:**  10. Manage Formatter  - Create Formatter  - Apply Rules  11. Manage Rules  - Add a new Rule  - Delete last Rule | **Collaborations:**  PDML (17)  Rule (22, 23)  Rule (22, 23) |
| **Comments:**  Contains Filter and Action rules specific to one Protocol; type of File | |

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| **Class Name:** GUI | |
| **Description:** Interfaces to PFS functionality | |
| **Contracts:**  **Private Responsibilities:**  - Accept input  - Visualize changes | **Collaborations:** |
| **Comments:**  Accepts inputs and outputs to display | |

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| **Class Name:** Historical Copy | |
| **Description:** File Class subtype which contains captured network data within PFS | |
| **Contracts:**  12. Manage Historical Copy  - Create PDML File  - Store PDML File  **Private Responsibilities:** | **Collaborations:**  File (7)  File (7) |
| **Comments:**  Attributes include identification as unmodifiable and metadata; type of File | |

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| **Class Name:** Hook | |
| **Description:** Steps to update a value of specific attributes of a Field | |
| **Contracts:**  13. Manage Hook  - Create Hook  - Remove Hook  14. Modify Hook  - Get input parameter(s)  - Modify link to Script  - Modify Script  15. Apply Hook  - Run Script  - Get return value to modify Field  **Private Responsibilities:** | **Collaborations:**  Action (1), Script (24)  Action (1)  GUI  GUI  GUI  Script (26)  Field (6) |
| **Comments:**  Contains path to Script, Field to modify, and input parameters to Script’s algorithm (*associated values of specific attributes defined in the Field*) | |

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| **Class Name:** Packet | |
| **Description:** Element of the PDML File | |
| **Contracts:**  16. Visualize Packet  - Show Packet  - Hide Packet  **Private Responsibilities:** | **Collaborations:**  Formatter (10)  Formatter (10) |
| **Comments:**  Contains one ProtoElement and the following required attributes: num (Integer), len (Bytes), caplen (Bytes), and timestamp (Float) | |

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| **Class Name:** PDML | |
| **Description:** Allows by subtype to modify and analyze network data within PFS | |
| **Contracts:**  17. Apply Formatter  - Apply Formatter Rules  - Update Field  18. Revert to Historical Copy  - Visualize Changes from PDML and Historical Copy  - Accept or Reject Changes  **Private Responsibilities:**  - Save Changes | **Collaborations:**  Formatter (10)  Field (6)  Historical Copy (12)  GUI |
| **Comments:**  Attributes include identification as modifiable and metadata; type of File | |

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| **Class Name:** Protocol | |
| **Description:** Contains Packets by which the matching Formatter can modify | |
| **Contracts:**  19. Visualize Protocol  - Show Protocol  - Hide Protocol  **Private Responsibilities:** | **Collaborations:**  Formatter (10)  Formatter (10) |
| **Comments:**  Contains one or more Packets | |

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| **Class Name:** ProtocolIdentifier | |
| **Description:** Scans PDML to identify existing and non-existing Formatters for each Protocol | |
| **Contracts:**  20. Scan PDML  - Identify Protocols  - Identify Formatters  - Create Formatters  **Private Responsibilities:** | **Collaborations:**  Formatter (10)  Formatter (10)  Formatter (10) |
| **Comments:**  Reads through Protocols in a modifiable PDML | |

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| **Class Name:** ProtoElement | |
| **Description:** Element of each Packet in a PDML File | |
| **Contracts:**  21. Manage ProtoElement  - Edit Action  - Edit Filter  - Edit Field  - Visualize Field  **Private Responsibilities:** | **Collaborations:**  Rule (23)  Rule (22)  Field (6)  Rule (23), Field (6) |
| **Comments:**  Contains one Field and the following attributes: name (String), longname (String), size (Bytes), and pos (Bytes) | |

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| **Class Name:** Rule | |
| **Description:** Set of Filters and Actions which to build the Formatter to modify the Protocol of a PDML | |
| **Contracts:**  22. Manage Rule’s Filters  - Add a new Filter to the Rule  - Delete the last Filter from the Rule  23. Manage Rule’s Actions  - Add a new Action to the Filter  - Delete the last Action from Rule  **Private Responsibilities:** | **Collaborations:**  Filter (8, 9)  Filter (8)  Action (1), AnnotationAction (3), Hook (13)  Action (1), AnnotationAction (3), Hook (13) |
| **Comments:**  Contains Filters and Actions | |

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| **Class Name:** Script | |
| **Description:** Subtype of File Class which contains the Python algorithm by which to update Field(s) | |
| **Contracts:**  24. Manage Script  - Create a new Script  - Delete Script  25. Modify Script  - Update algorithm  - Update file path  26. Run Script  - Get Return Value  - Update Field  **Private Responsibilities:** | **Collaborations:**  Hook (13, 14)  Hook (14)  Hook (14)  Hook (14)  Hook (15)  Hook (15) |
| **Comments:**  Contains editable algorithm and file path; type of File | |

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| **Class Name:** tShark | |
| **Description:** Handles operations for communications between tShark and Formatter Protocol System (FPS) | |
| **Contracts:**  27. Convert PCAP to PDML  - Send PCAP File  - Return parsed PDML File  **Private Responsibilities:** | **Collaborations:**  File (7)  File (7) |
| **Comments:**  External tool to Formatter Protocol System (FPS) | |